

Application No.: 10/774650  
Amendment dated: February 15, 2007  
Reply to Office action of December 13, 2006

#### REMARKS/ARGUMENTS

This application relates to subject matter similar to that claimed in the applicant's patent 7,077,774, but differs in that the claim of the present add a limitation effectively calling for an asymmetric sprocket tooth shape.

The rejection under 35 U.S.C. §103(a) is based in Ledvina and McKnight. However, it can be shown that Ledvina "teaches away" from the relationship between chain pitch  $P$  and pin diameter  $d$  as expressed by  $0.40P \leq d \leq 0.44P$ , and also teaches away from the relationship between chain pitch  $P$  and roller diameter  $D$ , as expressed by  $0.72P \leq D \leq 0.79P$ .

Ledvina also effectively requires the pin diameter to be not greater than  $0.34P$ , which is well outside the claimed  $0.40P$  to  $0.44P$  range. Ledvina's tabulated "best methods" also lead to relationships in which the roller diameter  $D$  is related to the chain pitch  $P$  by  $D=0.67P$  or  $D=0.70P$ , both of which are outside the  $0.72P$  to  $0.79P$  range.

It can also be shown that if McKnight's teachings are followed, the relationship between the radius of the tooth gap bottom ( $R1$ ) and the roller diameter  $D$  would fall outside the claimed range of  $0.505D \leq R1 \leq 0.505D + 0.069^3\sqrt{D}$  unless the roller is so large that it would not be suitable for an automotive timing chain.

The reasoning which leads to the above conclusions, and which led to the grant of patent 7,077,774 on application 10/774,020, is contained in a detailed response filed January 6, 2006 in connection with that application. The argument in

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the response, a copy of which is attached, is incorporated by reference, as it is fully applicable to the formulae

$$0.72P \leq D \leq 0.79P$$

$$0.40P \leq d \leq 0.44P$$

$$0.505D \leq R1 \leq 0.505D + 0.069^3\sqrt{D}$$

as set forth in claim 1 of the present application. The only difference between these formulae and the corresponding formulae in the claims of patent 7,077,774 is that the present case uses "R1" for the radius of the tooth gap bottom arc whereas the '774 patent uses "r" for the same measurement.

It should also be noted that the asymmetric tooth form as set forth in claim 1 is not disclosed the references relied upon. Asymmetric tooth shapes are shown, for example, in Young 5,921,878 and EP 1 175 359 (cited in the applicant's supplemental information disclosures of March, 2005, and November, 2005 respectively), but neither of those references appears to show the relationships set forth in the expressions

$$P - (0.505D + 0.069^3\sqrt{D}) \leq R2 \leq P - 0.505^3\sqrt{D} \text{ and}$$

$$0.08 \leq R3 \leq 0.13P.$$

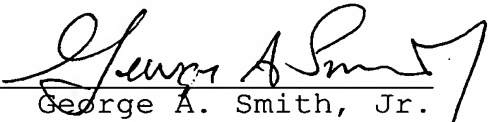
In any event, claim 1, as amended, should be found allowable for the reasons advanced in the argument with respect to Ledvina and McKnight.

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The rejection on obviousness-type double patenting is addressed by a terminal disclaimer, which is submitted herewith along with the require fee an \$3.73(b) statement.

Reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,  
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Enclosures:

- (a) terminal disclaimer
- (b) disclaimer fee
- (c) \$3.73(b) statement
- (d) copy of assignment
- (e) copy of response in 10/774,020